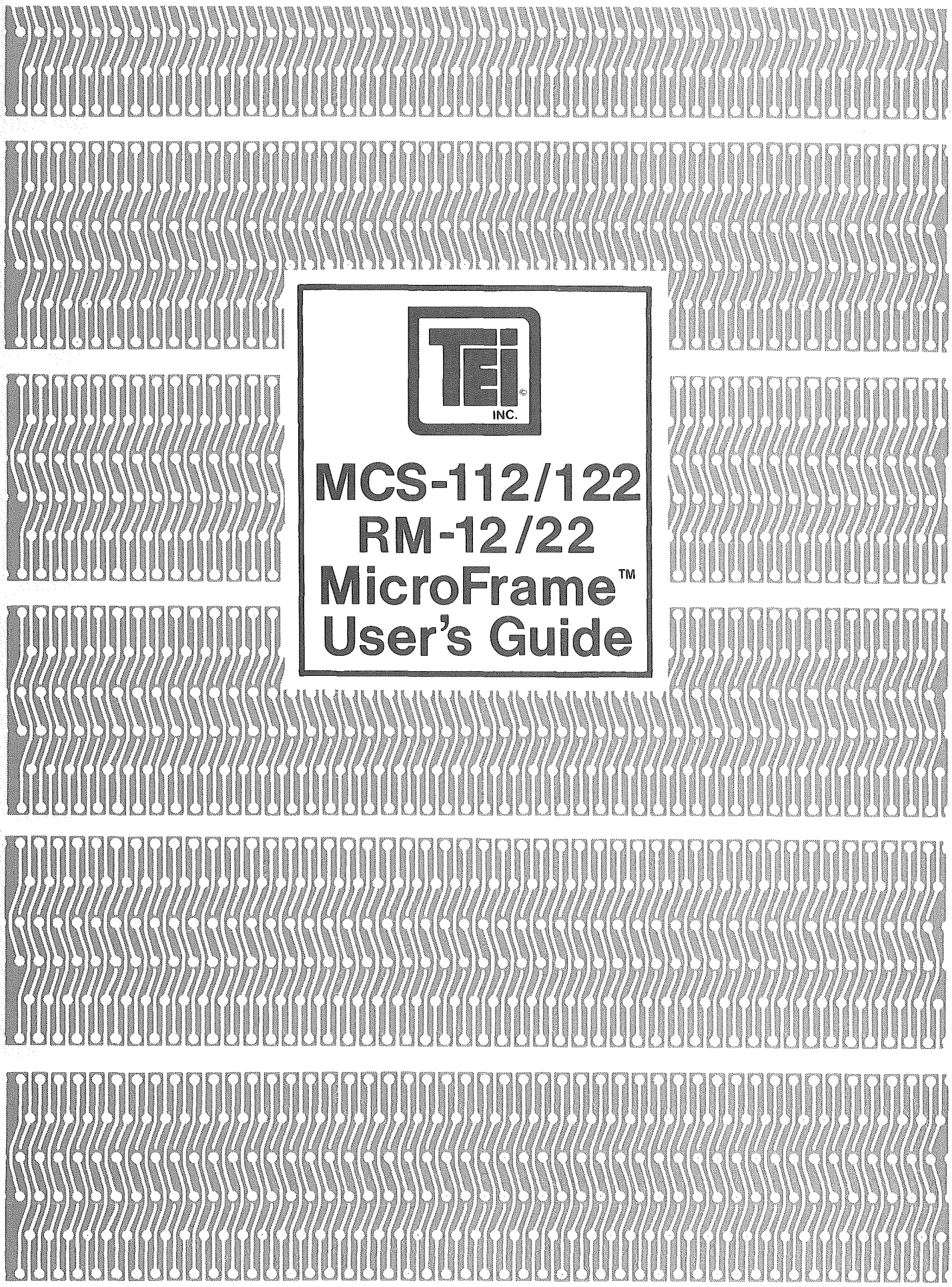
TEI
INC.
MCS-112/122
RM-12/22
MicroFrame™
User's Guide

ERRATA

Paragraph 1.2.1

AC input range 70 - 130 VAC.

Page 10

S-100 Bus Motherboard Active-Termination Logic. R14 and R15 connect to +8 VDC. R16 and Q1 emitter connect to ground.

S-100 Bus Motherboard. +8 VDC enters motherboard on Terminals 4 and 5. +16 VDC enters on Terminal 1.

Page 11

S-100 Bus Motherboard Active-Termination Logic. R14 and R15 connect to +8 VDC. R16 and Q1 emitter connect to ground.

Page 13

S-100 Bus Motherboard Active-Termination Logic. R14 and R15 connect to +8 VDC. R16 and Q1 emitter connect to ground.

Page 13

S-100 Bus Motherboard Active-Termination Logic. R14 and R15 connect to +8 VDC. R16 and Q1 emitter connect to ground.

NOTICE

A revised copy of this manual will be available about 1 July 1981.

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1.1.0 INTRODUCTION

This reference manual supplies information on the TEI, Inc. MCS-112/122 RM-12/22 Microcomputer Systems. If additional information is required, please contact your local dealer or representative.

1.2.1. MCS-112/122 GENERAL DESCRIPTION

The MCS-112/122 is TEI's solution to your system needs. The TEI Microcomputer System features the following:

--The MCS-112 offers a high quality constant voltage transformer (CVT) power supply which is rated conservatively at 8V @17A, ±16V @2A, over a voltage range of 95 to 130V AC; while the MCS-122 offers a CVT power supply rated at 8V @30A, ±16V @4A, over a voltage range of 95 to 130V AC.

--The MCS-112 offers a 12 slot mother board, while the MCS-122 features a 22 slot mother board. Both come with all connectors factory installed and tested; a Mate-N-Loc connector on the reset line for dedicated systems; screw terminal connections for the DC power leads; and provision for a front panel.

--The MCS-112/122 gives you a rugged industrial quality chassis; a back panel punched for eight DB25, two DB37 connectors, and cable clamp for ribbon cable; and the front panel features a lighted power switch and a reset switch.

The MCS-112/122 is designed to meet U.L. 478 specification for those who require commercial or industrial application. TEI, Inc. has been a quality electronic manufacturer for ten years, building highly reliable electronic systems for industrial use. Many of these are U.L. approved with some approved for use in medical equipment where only the highest quality and dependability will do. By purchasing the MCS-112/122, you have obtained the best Microcomputer Mainframe available today!

1.2.2. RM-12/RM-22 GENERAL DESCRIPTION

The TEI RM-12 & RM-22 are the same as the MCS-112/122 described above except for the ruggedized Retma Rack enclosures (19" W X 7" H Panel Mounting with chassis slides).

1.2.3 THEORY OF OPERATION

The MCS-112/122 can be considered as two separate electrical components. These are: (1) The Power Supply and (2) the Mother Board.

(1) The Power Supply is designed to deliver three (3) DC voltages to the Mother Board, +8V @17A, ±16 @2A for the MCS-112; +8V @30A, ±16V @4A for the MCS-122. Our CVT Power Supply also provides 1% line regulation from 95 to 130V AC input. This regulation is due to the use of a constant voltage (or Ferroresonant) transformer.*

(2) The Mother Board uses the "S-100" bus format and will accept all cards designed for this configuration. The purpose of the Mother Board is to provide the various signals and power paths from card to card and have all signals available on all connectors on the Mother Board.

1.2.4 RECEIVING INSPECTION

Immediately upon receiving your MCS-112/122 inspect all contents for damage which may have occured during shipping. If your MCS-112/122 arrives damaged or incomplete contact your dealer so that he can take appropriate action. For further information on replacement and repair, see section 1.2.4.

DIMENSIONAL DATA

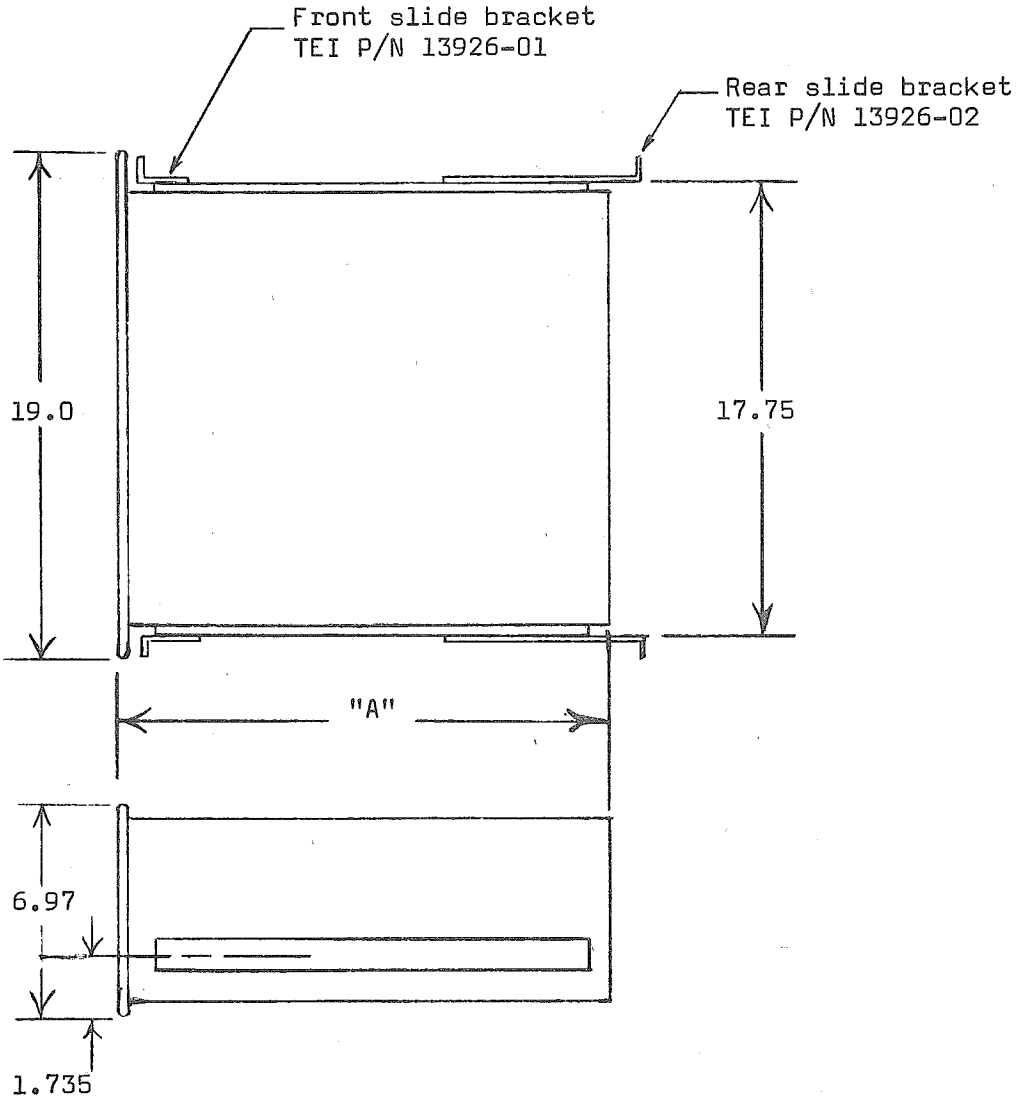
MCS-112 Dimensions: 17.25 Wide X 7.25 High X 12 Deep

MCS-122 Dimensions: 17.25 Wide X 7.25 High X 19.5 Deep

RM-12 Dimensions: 19" Wide X 7" High Rack Panel X 13" Deep

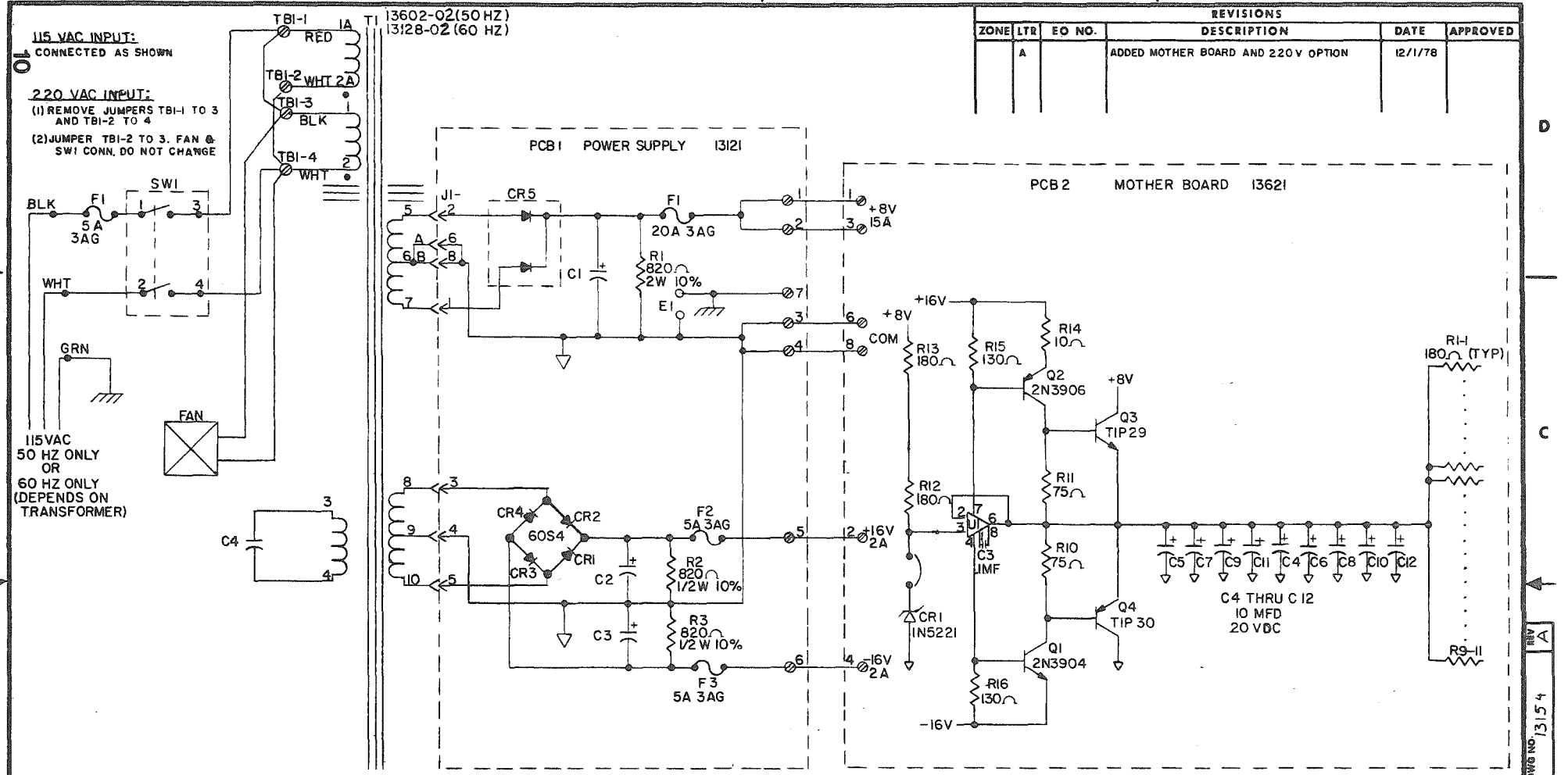
RM-22 Dimensions: 19" Wide X 7" High Rack Panel X 19.5 Deep

NOTE: Slide Bracket (#13926-02) will permit the RM-12 to be mounted up to 22" deep racks, and the RM-22 to mount in up to 28" deep racks.



	DIM A
RM-12	13.0
RM-22	19.5

RM-12/22
OUTLINE DRAWING



REVISIONS					
ZONE	LTR	EO NO.	DESCRIPTION	DATE	APPROVED
	A		ADDED MOTHER BOARD AND 220 V OPTION	12/1/78	

NOTES
C1 45,000 15V TEI P/N 1521-068
C2, C3 10,000 30V TEI P/N 1521-088
C4 3 MF 600 VAC TEI P/N 1543-006
CR1 THRU CR4 60S4 TEI P/N 4825-043
CR5 R712 VARO TEI P/N 4815-017

NOTES:

QTY	PART NUMBER	DESCRIPTION	MANUFACTURER	CODE IDENT	REF DES	ITEM

PARTS LIST

NEXT ASSY	USED ON
	MCS-112
APPLICATION	

DIMENSIONAL TOLERANCE UNLESS NOTED OTHERWISE
.X ± .06
.XX ± .02
.XXX ± .010
ANGULAR ± .5 DEG

SURFACE FINISH IN MICROINCHES RMS UNLESS NOTED OTHERWISE ✓

MATERIAL

CONTRACT NO.

SIGNATURES	DATE
DR Joseph B. Lockhart	11-30-78
DES	
CHK	
ENGR E. McCain	12-13-78
APP Wallace Berry	
APP	

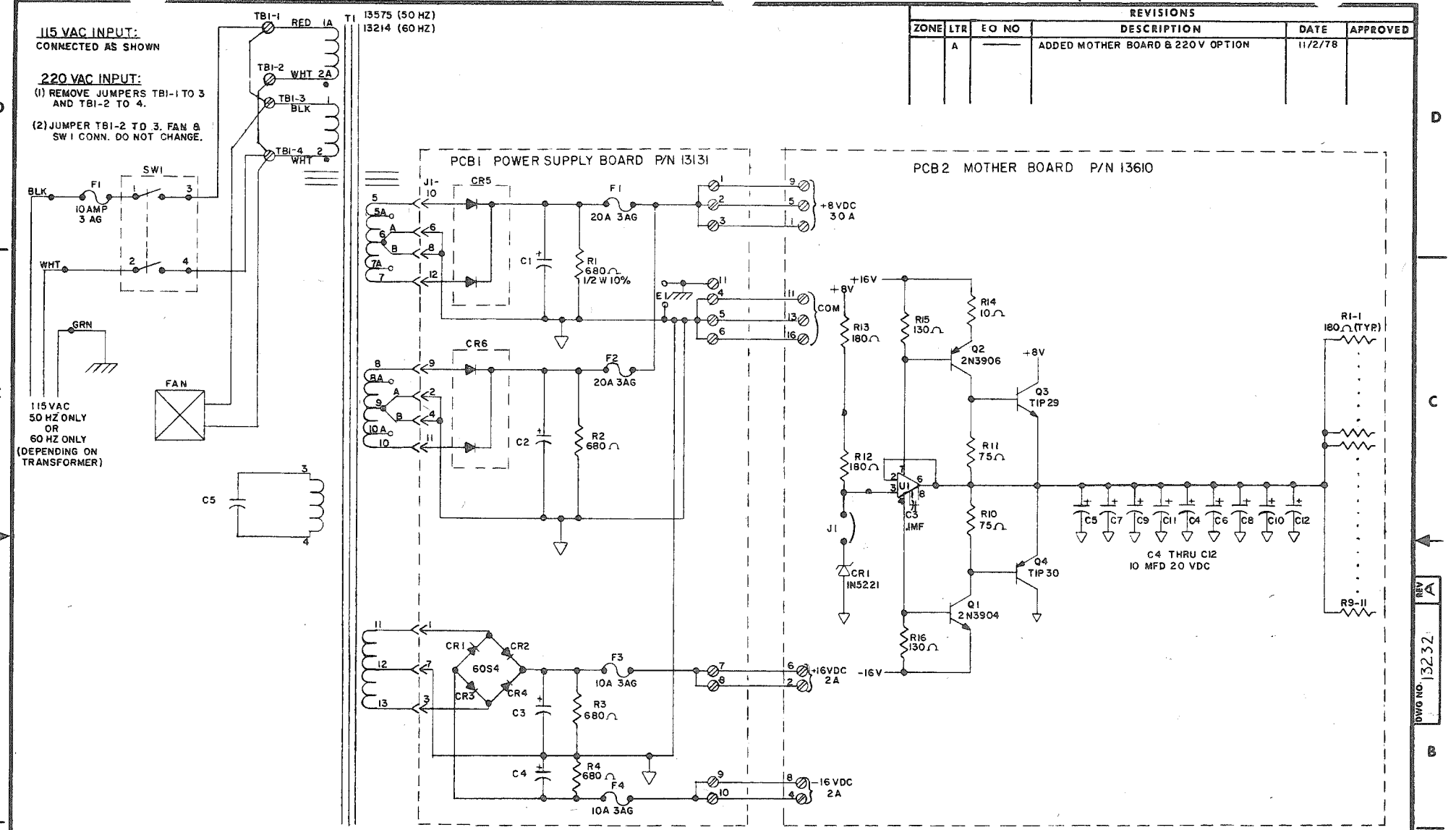
TEXAS ELECTRONIC INSTRUMENTS, INC
HOUSTON, TEXAS

MCS-112
SCHEMATIC

SIZE	CODE IDENT NO.	DWG NO.	REV
C	33179	13154	A

SCALE | REL EO NO. | SHEET | OF

REV A
DWG NO. 13154



REVISIONS					
ZONE	LTR	EO NO	DESCRIPTION	DATE	APPROVED
	A	——	ADDED MOTHER BOARD & 220V OPTION	11/2/78	

QTY	PART NUMBER	DESCRIPTION	MANUFACTURER	CODE IDENT	REF DES	ITEM

PARTS LIST

NOTES:

C1, C2	45,000 MF, 15V TEI P/N 1521-068
C3, C4	10,000 MF, 30 V TEI P/N 1521-088
C5	5 MF, 660 VAC TEI P/N 1543-001
CR1 THRU CR4	60S4 TEI P/N 4825-043
CR5, CR6	TEI P/N 4815-017

NOTES:

	MCS-122
NEXT ASSY	USED ON
APPLICATION	

DIMENSIONAL TOLERANCE UNLESS NOTED OTHERWISE
.X ± .06
.XX ± .02
.XXX ± .010
ANGULAR ± .5 DEG

SURFACE FINISH IN MICROINCHES RMS UNLESS NOTED OTHERWISE ✓

MATERIAL

CONTRACT NO.

SIGNATURES	DATE
DR J BROCHTRUP	11-2-78
DES	
CHK [illegible]	11-8-78
ENGR [illegible]	11-8-78
APP Wallace Berry	
APP	

TEXAS ELECTRONIC INSTRUMENTS, INC
HOUSTON, TEXAS

MCS-122
SCHEMATIC

SIZE	CODE IDENT NO.	DWG NO.	REV
C	33179	13232	A

SCALE | REL EO NO. | SHEET 1 OF 1

DWG NO. 13232 REV A

1.4.4 PARTS LIST

The following parts list is included to supply the necessary part numbers needed for ordering replacement parts.

MCS-112/RM-12

REF DES	DESCRIPTION	TEI P/N
	CHASSIS MOUNTED PARTS	
PCB2	* Mother Board 12 Slot	13620
PCB1	* Power Supply	13120
T1	Transformer (60Hz)	13128-02
T1	Trnasformer (50Hz)	13602-02
C4	Cap, 3MF @660 VAC	1543-006
PCB1-J1	Socket Housing, 8 CKT	2122-011
PCB2-J1	Socket Housing, 2 CKT	2122-021
Fan	Fan	2610-011
-	Filter, Fan	13146
SW1	Power Switch	5113-001
SW2	Reset Switch	5110-005
F1	Fuse 5A 250V, 3 AG	5173-062
-	Power Cord	6080-003
-	Rubber Feet	1419-001
-	Boot, Rubber Cap	1592-003
-	Card Guide	1750-004
-	Slide Bracket, Front	13926-01
-	Slide Bracket, Rear	13926-02

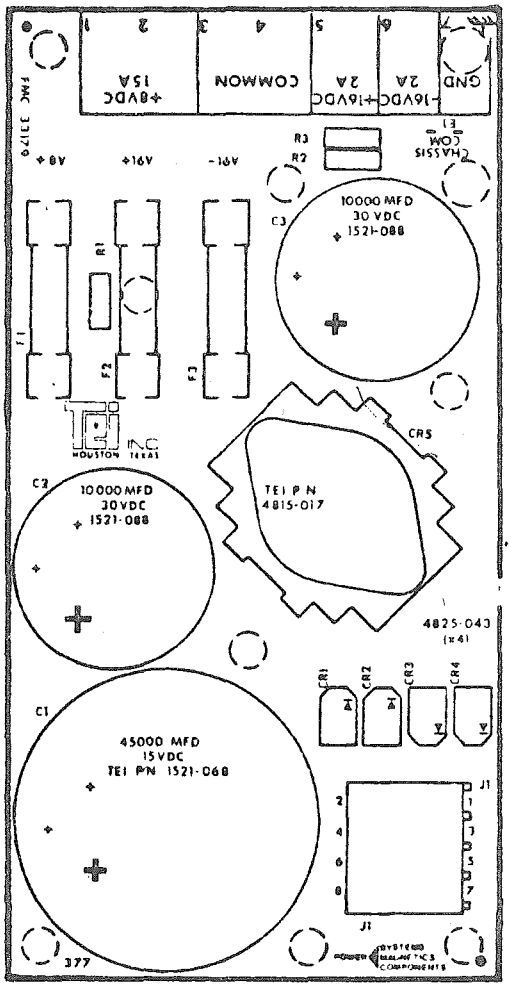
MCS-122/RM-22

REF DES	DESCRIPTION	TEI P/N
	Chassis Mounted Parts	
PCB2	* Mother Board 22 Slot	13610
PCB1	* Power Supply	13130
T1	Transformer (60Hz)	13214-02
T1	Transformer (50Hz)	13575-02
C4	Cap, 5MF @660 VAC	1543-001
PCB1-J1	Socket Housing, 12 CKT	2122-013
PCB2-J1	Socket Housing, 2 CKT	2122-021
FAN	FAN	2610-011
-	Filter,Fan	13146
SW1	Power Switch	5110-001
SW2	Reset Switch	5110-005
F1	Fuse 10A 250V, 3 AG	5173-079
-	Power Cord	6080-003
-	Rubber Feet	1419-001
-	Boot, Rubber Cap	1592-003
-	Card Guide	1750-004
-	Slide Bracket, Front	13926-01
-	Slide Bracket, Rear	13926-02

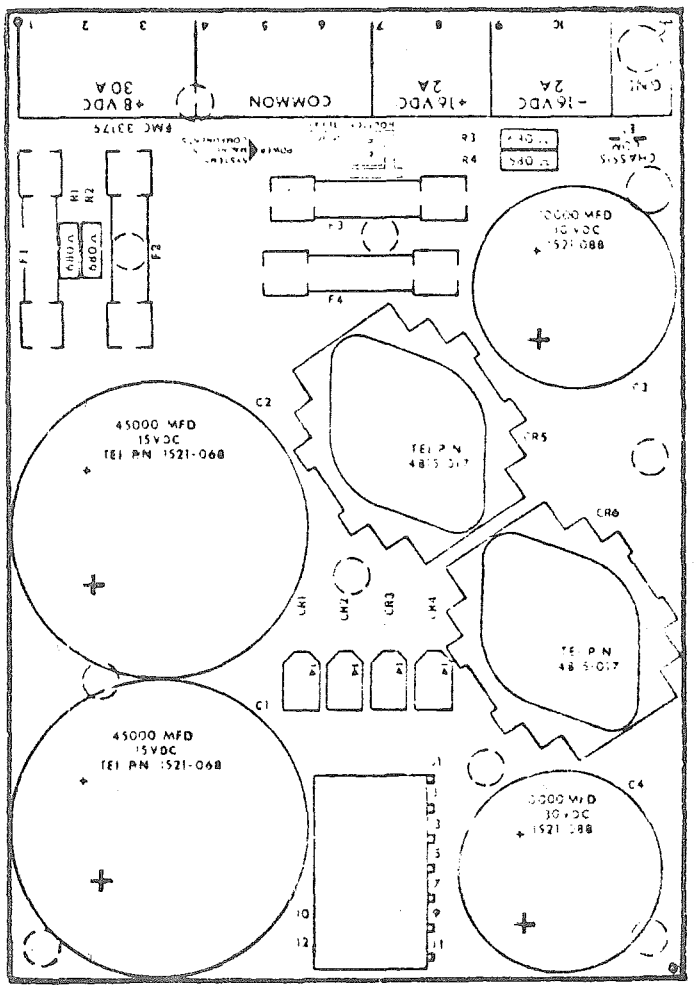
*Refer to pp. 13 & 14 For P.C. Board Data.

POWER SUPPLY PC BOARDS

PC BOARD #13120
MCS-112/RM-12



PC BOARD #13130
MCS-122/RM-22



PARTS LIST

REF DES	DESCRIPTION	TEI P/N
PCB	FAB Power Supply	13121
C1	Cap, 45,000 MFD, 15 VDC	1521-068
C2, C3	Cap, 10,000 MFD, 30 VDC	1521-088
CR1 thru CR4	Diode 60S4	4825-043
CR5	Rectifier, R702	4815-017
E1	#20 Ga Jumper	6009-003
F1	Fuse, 20A, 32V, 3AG	5173-029
F2, F3	Fuse, 5A, 250V, 3AG	5173-022
J	Pin Header, 8 CKT	2122-005
R1, R2, R3	RES 820 Ω 1/2 W 10%	4725-329

PARTS LIST

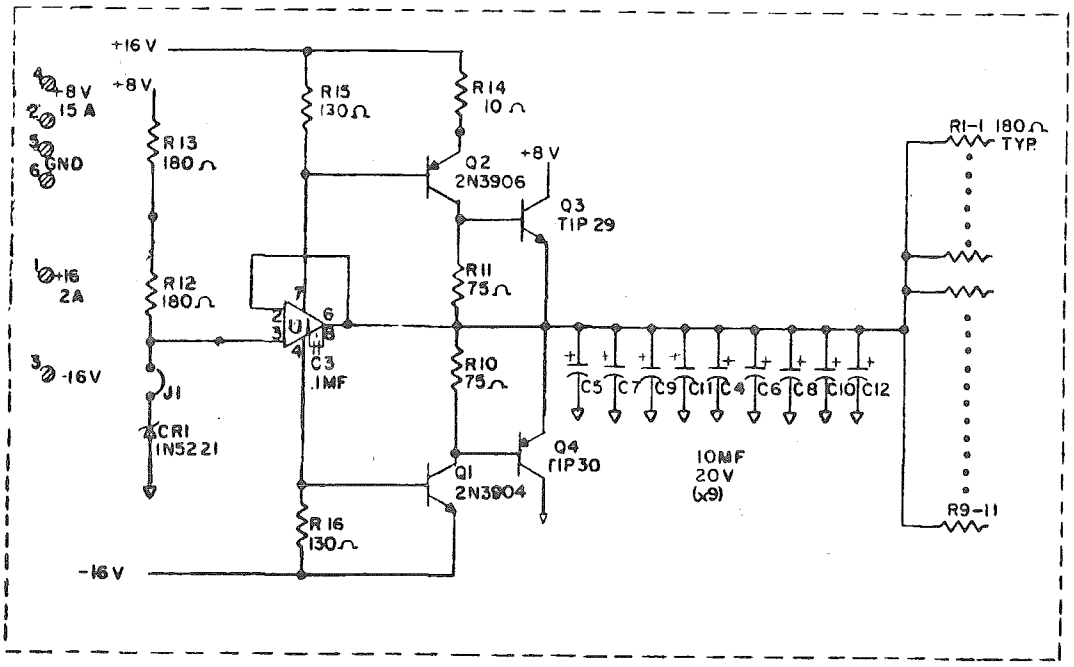
REF DES	DESCRIPTION	TEI P/N
PCB	FAB Power Supply	13131
C1,C2	Cap, 45,000 MFD, 15VDC	1521-068
C3,C4	Cap, 10,000 MFD, 30VDC	1521-088
CR1 thru CR4	Diode 60S4	4825-043
CR5,CR6	Rectifier, R702	4815-017
E1	#20 GA Jumper	6009-003
F1,F2	Fuse, 20A, 32V, 3AG	5173-029
F3,F4	Fuse, 10A, 32V, 3AG	5173-022
J1	Pin Header, 12 CKT	2122-007
R1, R2, R3,R4,	Res 680 Ω 1/2W 10%	4725-321

MOTHER BOARDS

P/N	CAPACITY	SIZE
13630	8 Slot	8.500 X 6.800
13620	12 Slot	8.500 X 10.050
13612	22 Slot	8.500 X 17.500

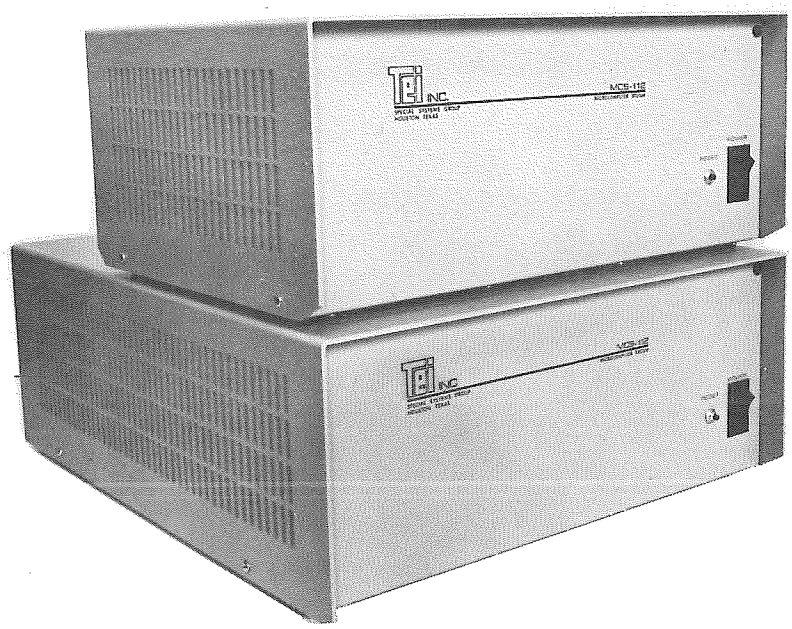
PARTS LIST

REF DES	P/N	DESCRIPTION	8 SLOT QTY	12 SLOT QTY	22 SLOT QTY
	13631	FAB TEI	1	-	-
	13621	FAB TEI	-	1	-
	13611	FAB TEI	-	-	1
C3	1562-002	CAP .1MF	1	1	1
C4-C12	1580-001	CAP 10MF@20V	9	9	9
	2122-020	PIN HEADER 2CKT	1	1	1
	2125-011	100 PIN EDGE CONN	8	12	22
U1	3100- 017	IC CHIP 748 MIL	1	1	1
	3190-002	IC SOCKET 8 PIN	1	1	1
R14	4741-145	RES. 10Ω 1/4 W 2%	1	1	1
R10,R11	4741-229	RES. 75Ω 1/4 W 2%	2	2	2
R15,R16	4741-252	RES. 130Ω 1/4 W 2%	2	2	2
R12,R13	4741-266	RES. 180Ω 1/4 W 2%	2	2	2
R1,R9	4784-002	11 SEG. RES. NETWORK 180Ω	9	9	9
CR1	4840-026	DIODE IN5221	1	1	1
Q1	4864-005	TRANS. 2N3904	1	1	1
Q2	4864-007	TRANS. 2N3906	1	1	1
Q4	4873-011	TRANS. TIP 30	1	1	1
Q3	4874-035	TRANS. TIP 29	1	1	1

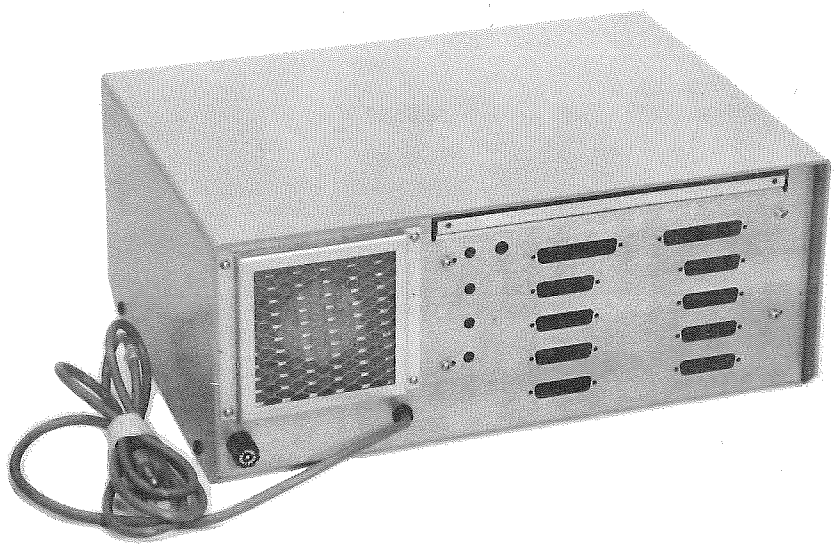


GENERAL ASSEMBLY VIEWS

Figure 1.4.1 COMPLETE ASSEMBLY WITH COVER



MCS-112 (top) and MCS-122 (btm)



Rear View MCS-112
(Typical for MCS-122)

1.5.1 TEST AND CHECKOUT

Follow this procedure to check mainframe for proper operation.

1) Visually inspect wiring from power supply to motherboard.
2) Check power supply connections for tightness.
3) With power switch off, plug line cord into AC socket.
4) Press Power switch to light indicator in switch.
5) With DC voltmeter, check for +8 VDC to +11 VDC between pin 1 (+) and pin 50 (-, Ground) on any connector on motherboard.(1))
6) Move (+) lead to pin 51 and check for +8 VDC to +11 VDC.
7) Move voltmeter (+) lead to pin 2 and check for +16 VDC - +18 VDC.
8) Move voltmeter (+) lead to pin 50, (-) lead to pin 52, and check for -16 VDC.
9) Move (-) lead back to pin 50. Move (+) lead to pin 75, then to pin 100. Neither pin should show any voltage reading.
10) Run (+) lead up and down remaining pins. Each should read about +2.4 VDC.

---

(1) Pin 1 is nearest front left corner. Pin 51 is directly behind it.

MicroFrame® Check List

TEI INC.
5075 S. LOOP E., HOUSTON, TEXAS 77033
(713) 738-2300, TWX: 910-881-3639

OK Sims

YOUR MAINFRAME IS A:

___MCS-112 ___RM-12 ✓ MCS-122 ___RM-22 ✓ 60Hz

S/N: 8801 TRANSFORMER W.O.#_____ ___50Hz

CONSISTS OF:

✓ (1) MAINFRAME
___(2) MAINFRAME USER'S MANUAL
___(3) RUBBER FEET (4 FOR MCS-112 ONLY) (6 FOR MCS-122 ONLY)
___(4) FUSE 5 AMP (USED ON MCS-112 and RM-12)
✓ (5) FUSE 10 AMP (USED ON MCS-122 and RM-22)
✓ (6) FUSE HOLDER CAP

NOTE: REFER TO USER'S MANUAL BEFORE OPERATING; ESPECIALLY WARRANTY REGISTER AND SECTION 1.3

FINAL QC CHECK-OFF:

✓ ABOVE ITEMS CHECKED
___IF 50Hz, CHECK LABELING
___OUTPUT CONNECTORS LABELED
✓ S/N ON UNIT AND PROPERLY RECORDED

QC INSPECTOR: K N, DATE: 9-17-81

DATE SHIPPED:_____

CARRIER:_____

SYSTEM W. O.# 1864

CUSTOMER:_____

Sales Order #_____

WHITE COPY - QUALITY CONTROL
CANARY COPY - OFFICE
PINK COPY - SHIPPING
GOLDENROD COPY - CUSTOMER

TEI FORM # 195-12A

5075 S. LOOP E., HOUSTON, TEXAS 77033, (713) 738-2300, TWX: 910-881-3639